SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-48

Name: Murdo Railroad Dam **County(ies):** Jones
Legal Description: T2S-R28E-Sec. 12 and 13 **GPS:** 43°52'43.38"N 100°42'34.71"W
Location from nearest town: ½ mile south and ½ mile west of Murdo

Date of present survey: July 6-7, 2015 (netting)
Date of last survey: June 18-20, 2012 (netting)
Most recent lake management plan: F-21-R-45 (January 1, 2013 to December 31, 2017)
Management classification: Warmwater Permanent

Primary Game Species	Secondary and Other Species
Largemouth Bass	Yellow Perch
Bluegill	Northern Pike
Black Bullhead	Black Crappie

PHYSICAL DATA

Surface Area: 17 acres **Watershed:** 1,280 acres
Maximum Depth: 20 feet **Mean Depth:** 8.6 feet
Lake elevation at time of survey (field observations): Full
Contour map: Yes **Date:** 1985

Ownership of lake and adjacent lakeshore properties:

Murdo Railroad Dam is owned by the City of Murdo and the South Dakota Department of Game, Fish and Parks complete fisheries management activities. Since Murdo Railroad Dam was constructed solely as a water source for the railroad and later sold to the city, no recorded effort has been made to provide easement to the State of South Dakota or the Department of Game, Fish and Parks for recreational use or water rights.

Watershed condition with percentages of land use types:

The watershed of Murdo Railroad Dam is approximately 1,280 acres. The majority of the watershed lies within or immediately adjacent to the City of Murdo. Land use in the watershed is municipal property and native grasslands that surround the city. Murdo's storm sewer system drains directly into the lake.

Fishing access:

Access to the lake is good however aquatic vegetation can hamper angling opportunities. There is no boat ramp located on the lake. There is an area on the southeast corner of the lake where small duck type boats could be launched.

Condition of all structures (i.e. spillway, boat ramps, level regulators, etc.):

Access trail is a dirt trail but in good condition. The area where a small boat could be launched from has a large, steep hill to go up and down, which becomes impassable when wet. The dam appears to be in good condition. No other facilities or structures were observed at the lake.

Field observations of aquatic vegetation condition:

Emergent vegetation, mainly cattails and bulrushes, surrounds about 85% of the shoreline. The submergent vegetation is mainly milfoil and is scattered throughout the lake and becomes very dense above the bridge.

CHEMICAL DATA

Field observations of water quality and pollution problems:

Heavy siltation is the main pollution problem at the time of the survey. Water clarity was excellent with a secchi disc reading of 8.0 feet. Other water quality characteristics were measured in the field on July 6, 2015, using a HACH water quality kit and a Hanna multiparameter meter. The results are found in Table 1.

Presence of a thermocline and depth from surface: No
Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Murdo Railroad Dam, Jones County, June 18, 2012.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond. (µS/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	77.9	4.00	--	205	887	8.59	2900	1450	1.50	-158.8	8.0
A	13.5	76.1	0.05	--	344	983	7.68	3117	1559	1.62	-445.5	

BIOLOGICAL DATA

Methods:

Murdo Railroad Dam was sampled on July 6-7, 2015, with five overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets or electrofishing was performed during this sampling period. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Trap Net Catch

Table 2. Total catch of five, overnight ¾-inch frame nets at Murdo Railroad Dam, Jones County, July 6-7, 2015.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	221	62.0	44.2	± 26.8	73.8	2	0	98
Black Crappie	117	32.9	23.4	± 15.0	1.6	12	0	121
Green Sunfish	17	4.8	3.4	± 2.8	0.0**	--	--	121
Golden Shiner	1	0.3	0.2	± 0.3	0.0**	--	--	106

* Eleven year mean (1971, 1975, 1978, 1987, 1995, 1998, 2001, 2003, 2006, 2009, 2012)
** First recorded sampling

Black Bullhead

Black bullheads continue to be the dominant species found in Murdo Railroad Dam. The CPUE of 44.2 is down from the 52.0 from the 2012 survey (Table 5) as well as the 73.8 eleven year mean (Table 2). Size structure is down with a PSD of 2 with an RSD-P of 0 compared to the 15 and 1 respectively from the 2012 survey. Figures 1 through 7 illustrate the length frequency histograms for the fish sampled from the last seven surveys. Condition is good with a mean Wr of 98. It will be interesting to see how this population continues to respond to the black crappie population that has reestablished in the lake.

Figure 1. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2015.

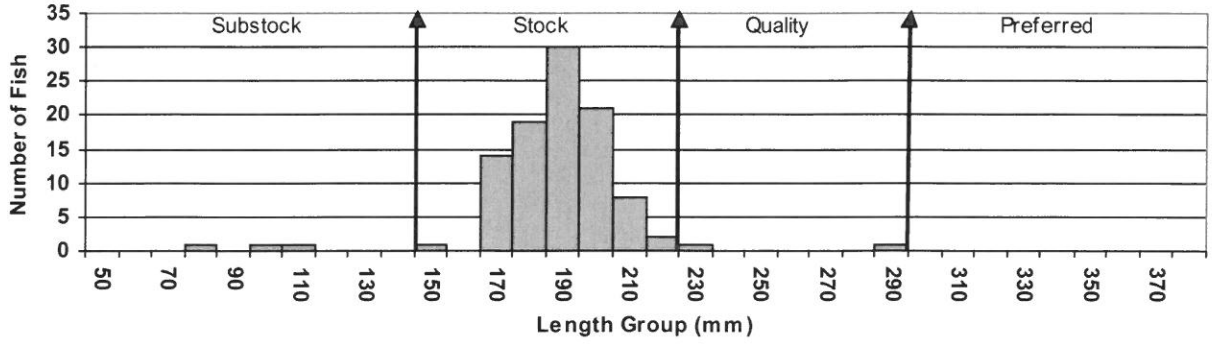


Figure 2. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2012.

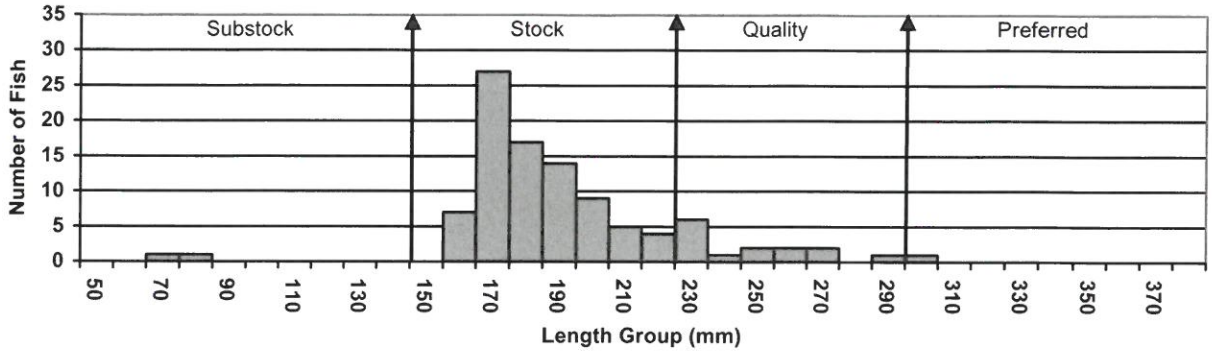


Figure 3. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2009.

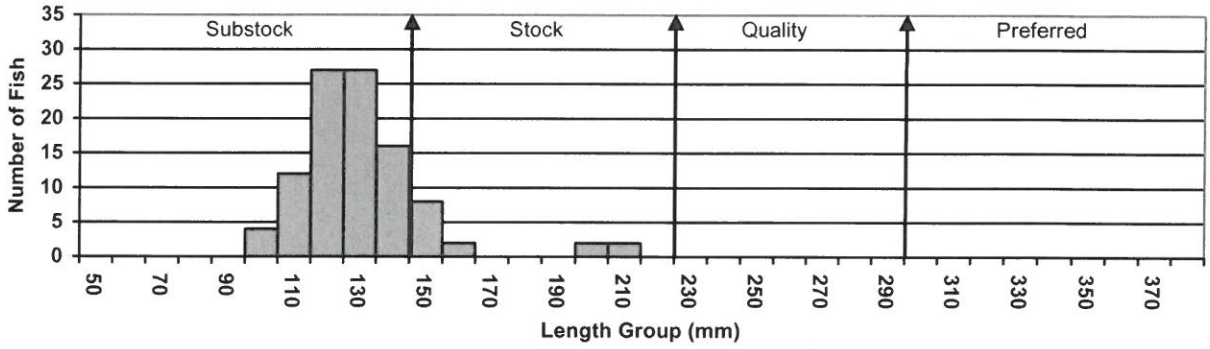


Figure 4. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2006.

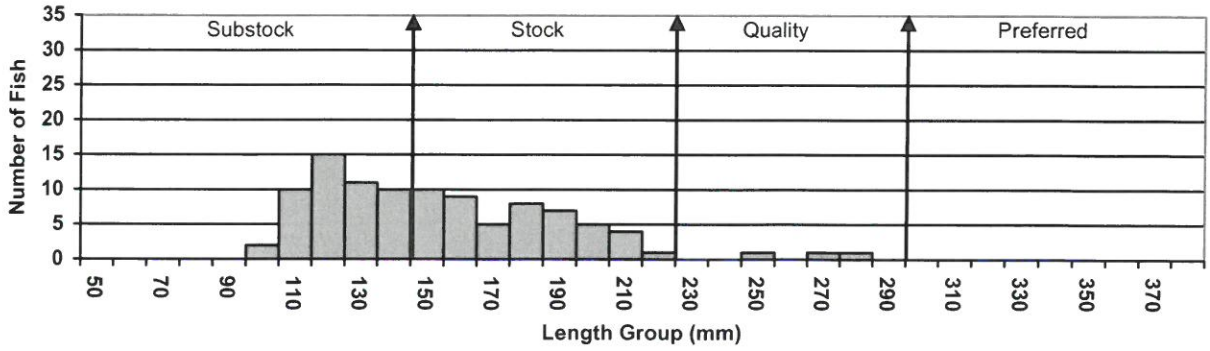


Figure 5. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2003.

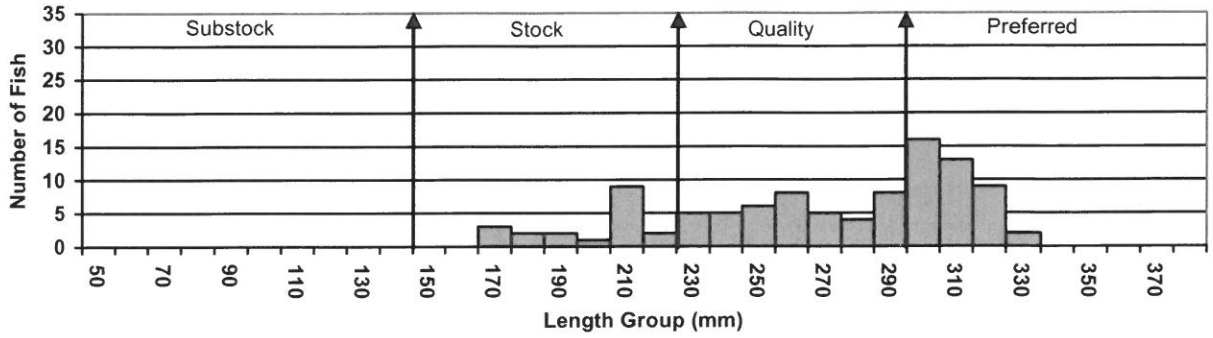


Figure 6. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 2001.

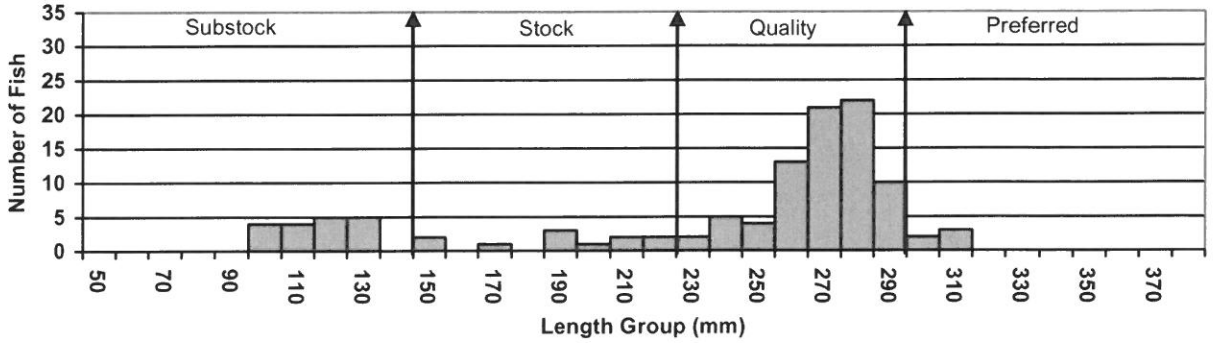
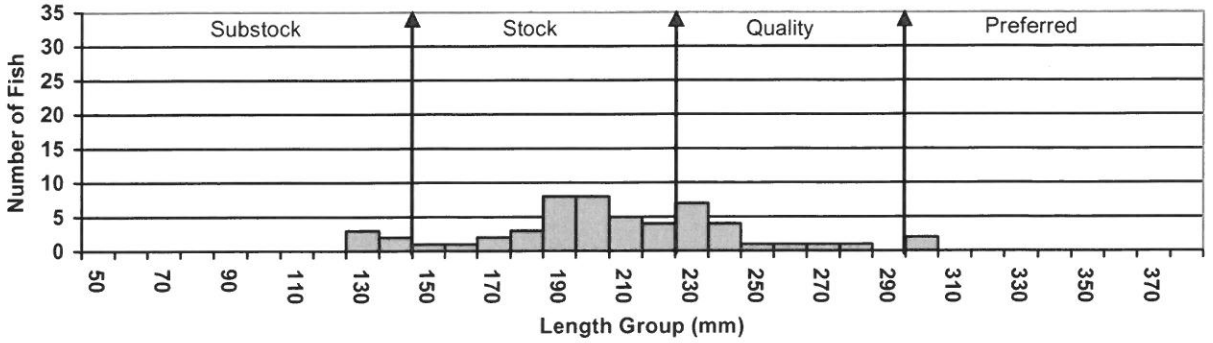


Figure 7. Length frequency histogram for black bullhead sampled from Murdo Railroad Dam, Jones County, 1998.



Black Crappie

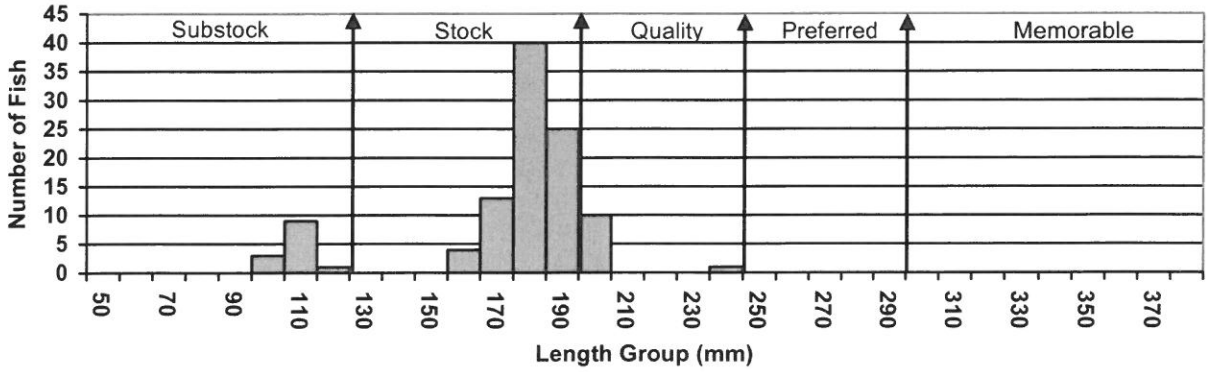
Black crappies appear to be reestablishing in Murdo Railroad Dam. The CPUE of 23.4 is well above the 0.1 from the 2012 survey (Table 5) as well as the 1.6 eleven year mean (Table 2). Figure 8 illustrates the length frequency histogram for the fish sampled this survey. Growth is good with mean right around statewide, regional and SLI means (Table 3). Condition is good with a mean Wr of 121. This population is a nice addition to the lake and they should help to control the black bullhead population.

Table 3. Average back-calculated lengths (mm) for each age class of black crappie sampled from Murdo Railroad Dam, Jones County, 2015.

			Back-calculated Age		
Year Class	Age	N	1	2	3
2014	1	13	76		
2013	2	92	89	175	
2012	3	1	72	168	236
All Classes		**106**	**79**	**171**	**236**
Statewide Mean			83	147	195
Region II Mean			75	132	177
SLI* Mean			78	134	180

* Small Lakes and Impoundments

Figure 8. Length frequency histogram for black crappie sampled from Murdo Railroad Dam, Jones County, 2015.



Other species

Green sunfish and golden shiner were both new species sampled this survey that have never been sampled before in Murdo Railroad Dam (Table 5). Yellow perch, largemouth bass, northern pike, channel catfish and bluegill were the species not sampled this survey that have been in years past.

Table 4. Stocking records from 2000 to current for Murdo Railroad Dam, Jones County.

Year	Number	Species	Size
2000	300	Bluegill	Adult
2001	2,800	Largemouth Bass	Fingerling
2001	262	Largemouth Bass	Adult
2004	50	Largemouth Bass	Adult
2009	1,800	Largemouth Bass	Fingerlings
2010	75	Largemouth Bass	Juvenile
2012	60	Largemouth Bass	Juvenile

Table 5. Gill net (GN) and trap net (TN) CPUE for all fish species sampled in Murdo Railroad Dam since surveys started.

Species	1971	1975	1978	1987	1995	1998	2001	2003	2006	2009	2012	2015
BLB (GN)	--	--	--	--	0.5	--	--	--	--	--	--	--
BLB (TN)	10.9	19.7	0.5	89.8	13.6	86.6	28.4	12.8	279.9	217.1	52.0	44.2
BLC (GN)	--	--	--	--	28.0	--	--	--	--	--	--	--
BLC (TN)	--	--	0.5	2.4	13.7	0.1	0.1	0.2	--	--	0.1	23.4
YEP (GN)	--	123.0	61.5	--	--	--	--	--	--	--	--	--
YEP (TN)	3.1	147.8	83.0	0.3	--	--	--	--	--	--	--	--
LMB (GN)	--	1.0	--	--	--	--	--	--	--	--	--	--
LMB (TN)	1.1	--	--	--	0.1	--	0.1	--	0.1	0.1	--	--
NOP (GN)	--	1.0	--	--	2.0	--	--	--	--	--	--	--
NOP (TN)	0.8	0.2	0.2	--	0.5	0.1	--	--	--	--	--	--
CCF (GN)	--	2.0	--	--	--	--	--	--	--	--	--	--
CCF (TN)	0.1	--	--	--	--	--	--	--	--	--	--	--
BLG (GN)	--	--	--	--	0.5	--	--	--	--	--	--	--
BLG (TN)	0.1	--	9.5	1.8	29.9	--	4.5	0.8	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	--	--	--	--	--	--	--	--	--	--	--	3.4
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	--	--	--	--	--	--	--	--	0.2

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, NOP-Northern Pike, CCF-Channel Catfish, BLG-Bluegill, GSF-Green Sunfish, GOS-Golden Shiner

RECOMMENDATIONS

1. Resurvey in 2015 to monitor the fish populations.

2. Stock adult and juvenile largemouth bass to bolster the population to control the black bullhead population.